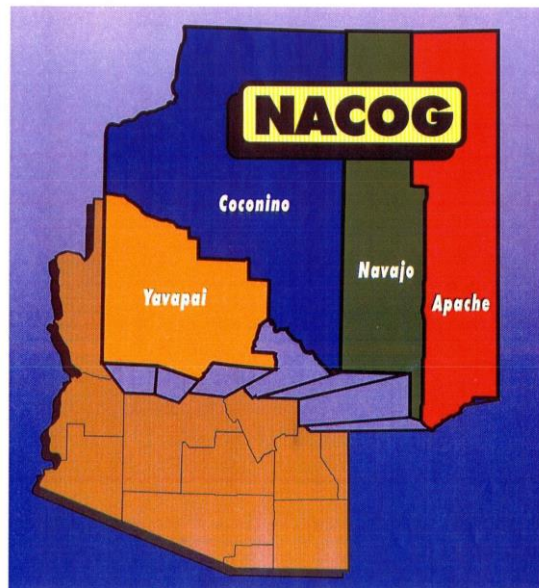


Northern Arizona Council of Governments (NACOG)

Broadband Business Case Analysis (BCA)



For
**Arizona Strategic Enterprise
Technology Office (ASET)**

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NACOG Broadband Business Case Analysis (BCA)

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NACOG Broadband Business Case Analysis (BCA)

Preface:

High speed Internet is the new essential infrastructure for this century's job creation, educational and healthcare transformation, and economic development, just as highways, railroads, canals, electricity, and telephone were for previous generations. It is the 21st century's infrastructure challenge and it is becoming ever more critical that communities in NACOG have adequate bandwidth to help our local economies, create jobs, and improve education, healthcare, public safety, and quality of life.

Earlier last year saw the formation of a **NACOG Broadband Steering Committee** (http://www.NACOG.az.gov/NACOG_facilities.aspx?id=12402) with broad participation among regional economic development, educational technology, transportation, government IT, healthcare, and public safety stakeholders. The Committee and its activities are being funded, in part, by a federal broadband grant administered through the **State of Arizona's Digital Arizona Program (DAP - <http://azbroadband.gov/>)**.

NACOG has been selected to receive these funds to help advance broadband assessment, gap analysis, strategy, tactics, and application adoption in Apache, Navajo, Coconino and Yavapai counties. **Systems Technology Staffing, LLC** has been hired for Community Planning support under the grant and their consultants are facilitating the NACOG Broadband Steering Committee, collecting and analyzing regional broadband and economic data, producing a series of reports, and otherwise assisting with this project.

There are several **Digital Arizona Program (DAP)** initiatives at the state level. The Governor's **Digital Arizona Council (DAC)** with their web presence at

http://www.digitalarizona.gov/Digital_Arizona_Council/About_DAC.html had met quarterly and is working on an Arizona Broadband Strategic Plan. The **Arizona Broadband Map** portal:

(http://www.digitalarizona.gov/Maps/Arizona_Broadband_Maps.html) offer interactive insight to broadband coverage across the state and the community planning version integrates substantial demographic and economic data to aid policy analysis and planning. DAP has recently launched an **Arizona Broadband Speed Test** available for resident and enterprise use at <http://www.digitalarizona.gov/Survey/AffiliationQuestion.html> for gathering information about broadband coverage and performance across the State. They are encouraging NACOG broadband stakeholders to take the speed test periodically and to also distribute the information and request to utilize among their respective stakeholder community.

The **Arizona Strategic Enterprise Technology Office (ASET)** coordinates these initiatives. Their office address is 100 N. 15th Ave. Suite 400, Phoenix, AZ 85007, and their main phone number is: (602) 542-2250. Additional information and resources may

be found online at the ASET website: <http://aset.azdoa.gov/> and the Digital Arizona Program's (DAP) website at <http://DigitalArizona.gov/>. The DAP primary email address is question@DigitalArizona.gov.

Disclaimer: None of the information in this report should be construed as official public policy of NACOG's regional governments or the Arizona State government. However, funding to assist in producing this report came from a federal NTIA grant managed by an Arizona State agency.

NACOG Broadband Business Case Analysis (BCA)

Executive Summary:

The **NACOG Counties** that are the focus of this Broadband Business Case Analysis (BCA) include Apache, Navajo, Coconino and Yavapai with NACOG leading the procurement and management of broadband consultant services.

A **NACOG Broadband Steering Committee** was formed with broad participation among regional economic development, educational technology, transportation, government IT, healthcare, and public safety stakeholders to help ensure that the NACOG region has adequate bandwidth to help our local economies, create jobs, and improve education, healthcare, public safety, and quality of life. It is important to recognize NACOG's value of broadband and this can be seen in the update to the CEDS report, [Appendix P](#).

Because of a shortage of resources (manpower), SR 260 and Broadband and a grant from USDA for a Rural Business Enterprise Grant (RBEG) with Broadband, were selected as the main projects to proceed with in the development of a Business Case Analysis.

History of the Deliverables - Reports:

This process of report generation included three significant milestone reporting periods. The first report was delivered on schedule before July 31, 2013. This report contained specifics about the original four regions, broadband coverage and service, speeds obtained for the NACOG Region can be seen in [Appendix M](#), and most important were the recommendations to make the Digital Arizona Program a success and provide sustainability for the region's major objective(s). This final report follows the recommendations.

Prior to the second report, delivered on schedule before December 31, 2013, ASET conducted a meeting on November 25, 2013. In attendance were the region's stakeholders and consultants. The message from ASET was clear, it was to formulate a project and generate demand aggregation from the regional stakeholders and providers. This particular report demonstrated active work on the three major regions: NACOG, CAG and S.S/E Arizona (NACOG). It set the agenda for regional stakeholders to identify project(s) that would have the best likelihood for success. [See Appendix A](#).

This final, 3rd report, represents the outcome of the Digital Arizona Program Community Planning and Technical Assistance activities. This document serves as the **NACOG Final Deliverable report**. It addresses the recommendations as identified in the first report and responds to the requirements of the Business Case Analysis contract with

the regions. It provides a flow into the Technical Assistance report, where the GAP Analysis outcome to date is presented.

Summary:

This report identifies the contractual objectives as defined in the FORM DAP-AT-E2, EXHIBIT 2 FOR BROADBAND LOCAL PLANNING ASSISTANCE TO ARIZONA COMMUNITIES, SEPTEMBER 28, 2013.

This report is structured to respond to the Statement of Work as described in the FORM DAP-AT-E2 with identification of specific objectives and a response relative to the deliverables of the objectives. Additionally, it provides a brief history of the major REPORT milestones and detail descriptions of the specific SR 260 and Broadband project and the RBEG / Broadband Project in the NACOG Four County region.

It is recommended that the SR 260 and Broadband project be emulated as a template for Project Management, for the other county's counties' broadband programs. The SR 260 and Broadband project has delivered on Leadership, Action Items, Scheduling and Demand Aggregation assets (stakeholders and providers), working closely together to bring about results. The RBEG / Broadband Project applies traction by collaborating with City of Maricopa Center for Entrepreneurship (MCE) and Globe, Arizona Economic Development. Future plans are for Cottonwood, Arizona.

The NACOG Four County Broadband Local Planning Assistance to Arizona Communities report, (first of 3 report milestones – July), produced and provided by Systems Technology Staffing, July 31, 2013, served as the document that identified the broadband services and capacities throughout the NACOG Four County region. It also included many recommendations that were subsequently followed in the second report (ASET/NTIA Quarterly - December 31, 2013 see Appendix A) and delivered in the third report (April 15, 2014).

Limited resources and time have prevented the development of additional projects in the region. There are needs and many opportunities for Northern Arizona to fulfill and they include, but are not limited to:

- Region 1 – Ash Fork, where a potential manufacturer is investigating properties to open a plant.
- Region 2 – Williams, a pristine northern Arizona community that is mainly focused on tourism. Moderate home prices than those in the Flagstaff area make this community more affordable for those who work in Flagstaff.
- Region 3 – Verde Valley Regional Economic Organization (VVREO). This region has a developing economy with the upgrade to SR 260. The SR 260 and Broadband project is the major program selected by NACOG and stakeholders.

- Region 4 – Winslow, is a growing economic region. Land is available around the community. It also offers more affordable housing than Flagstaff, where the labor force can easily commute.

What does broadband in Arizona look like?

Some 46% percent of Arizona households have connectivity at less than the National broadband definition of 4 Mbps download and 1 Mbps upload. Akamai data shows that Arizona ranks 45th in the nation with a 4.8 Mbps average speed experienced by broadband subscribers (second quarter 2012). There is significantly less availability of high-speed services in rural parts of the state compared to metropolitan areas. Unless something is done, this “digital divide” will only increase because modern Internet is becoming increasingly video intensive. The next generation of Internet and applications will be all about high definition video, requiring as much as ten times the broadband capacity of previous generation Internet uses. In addition, businesses will increasingly rely on cloud computing, web-conferencing with real time video for communications and collaboration, and telework, each layering on the need for even greater broadband capacity. So previous definitions of sufficient Internet access speeds are rapidly becoming obsolete.

The Governor signed legislation during the 2011-12 session (SB 1402) that enables Arizona’s state highway rights of way to be utilized to help build out badly needed middle mile broadband fiber capacity to rural areas of Arizona while supporting other high-capacity middle mile and long haul connectivity needs. A number of companies have expressed interest in utilizing the resources made available by SB1402. During the most recent legislative session, a telemedicine bill (SB 1353) was passed for payment parity for remotely delivered services, the implementation of which will simultaneously reduce medical costs, save lives, and improve rural economies by requiring health insurance providers to reimburse medical specialists for services provided via broadband-based telemedicine. And a data center bill (HB 2009) was passed to encourage regional placement of data center facilities via favorable tax policy.

Specifically, this Business Case Analysis (BCA) shows NACOG regions have limited broadband capacity, diversity, and backhaul capabilities. Minimum Sufficient Speed Threshold tables were identified for four major application areas, economic development, education, telemedicine and public safety. Even with speed thresholds as low as 10 Mbps download and 5Mbps upload, no community reviewed in these three NACOG regions could be considered as meeting threshold standards for all of these important applications. This is a critical issue that must be resolved for continuous economic development and improvements in education, healthcare and public safety to continue as well as for the general economic well-being of NACOG communities. The importance of doing this is because it will ultimately enhance the four major applications, as next described.

Four Major Applications

Foster local ECONOMIC DEVELOPMENT (JOBS) by:

- Attracting new businesses plus retaining and expanding the current businesses
- Providing local jobs and developing new skill-sets necessary to increase employment and community sustainability in today's knowledge economy
- Supporting local entrepreneurs who engage with the global economy using broadband and the Internet to deliver goods and services around the globe

Improve EDUCATION success within local communities by:

- Increasing the effective use of interactive digital learning solutions such as self-paced learning and remote content resources for transformational education initiatives
- Providing distance learning and collaboration in classrooms, homes, and businesses for students of all ages with universities around the world
- Enabling real-time progress accountability for student and staff performance supporting early intervention and remediation

RBEG is intended to develop entrepreneurs throughout 6 rural counties. This program was recognized by USDA as one of the nation's Rural Innovation Programs. The RBEG is partnering with MCE in the City of Maricopa to expand rural entrepreneurs. MCE is participating with the schools to provide innovative programs under STEM.

- Because the RBEG does have broadband as a critical element, a Broadband Checklist was created for communities/regions not familiar with broadband infrastructure and capacity. The Checklist can be seen in [Appendix O](#).

Improve HEALTH CARE (Telemedicine) availability and quality while lowering costs by:

- Using high-speed broadband connectivity for local doctors and healthcare providers to collaborate with remote specialists
- Improving local triage to reduce unnecessary transportation of patients to remote facilities
- Providing remote well-being check-ups from existing local facilities such as schools, libraries, etc.
- Providing enhanced in-home care with monitored sensors and video check-ups by remote health care providers

Distance Learning and Telemedicine: The **North Country Healthcare, Northern Arizona Health Education Center** includes 14 clinics along I-40, including the communities of Show Low and Kingman, AZ. North Country earned a USDA Distance Learning and Telemedicine grant. Additionally, they support the tribes (Navajo and Hopi). www.northcountryhealthcare.org

Flagstaff Medical Center (FMC) in 2013 applied for a USDA Telemedicine grant and in 2014 was the one out of three Arizona applicants to be awarded. FMC's partners include:

- [FMC Foundation](#)
- [Indian Health Service](#)
- [Maricopa Integrated Health System](#)
- [Mayo Clinic Scottsdale](#)
- [NARBA - Northern Arizona Behavioral Health Authority](#)
- [North Country HealthCare](#)
- [Phoenix Children's Hospital](#)
- [The Arizona Telemedicine Program](#)
- [Verizon Foundation](#)

Improve PUBLIC SAFETY and save lives by:

- Delivering accurate real-time data to all first-responders as needed and across jurisdictional/agency boundaries and connecting ad-hoc groups on a per event basis

NACOG / SR 260 and Broadband Project

NACOG selected the project SR 260 and Broadband and the USDA RBEG Resource Center with Broadband its two main projects. Economic Development is a key success factor for SR 260 and Broadband. It represents jobs (construction and FTEs) for the businesses along the corridor, including local anchor businesses and government. Education is another key element and the Unified School District and Yavapai Community College are active broadband team members. The USDA RBEG with Broadband represents the second major project. This project expands beyond the four counties in NACOG, and includes Gila and Pinal counties. The RBEG with Broadband goal is to establish Resource Centers with workshops to help entrepreneurs in rural Arizona. Without internet capability entrepreneurs have a less likelihood of sustainable business.

Healthcare or Telemedicine includes has the Flagstaff Medical Center's award of USDA's Telemedicine grant. Additional major projects include Prescott Valley's Arizona Commerce Authority Grant. Economic Development, Education and Healthcare-Telemedicine are the Key Applications for NACOG's Rural Arizona Broadband. Public Safety was mostly isolated to Chino Valley.

Project Process:

The project's process flow followed the Community Planning Guidelines. It began by seeking a major project that would have an economic impact regionally. The NACOG Broadband Committee chose the SR 260 and Broadband as the major project. This project is represented by the Verde Valley and includes communities such as Camp Verde, Cottonwood and Clarkdale. Outlier communities include Sedona, Cornville, McGuireville, and Rim Rock. Several conference calls and committee member meetings have been held to organize efforts around ADOT's ROW, Providers and Stakeholders' participation. The response was to find a project that had a need for broadband. SR 260 and Broadband continues to be NACOG's main project. Due to limited resources (manpower), SR 260 and Broadband is one of two major projects for the NACOG Region. This does not exclude the importance of other community's projects. For example, the Town of Prescott Valley obtained an Arizona Commerce Authority Grant. Old Town Cottonwood and Out of Africa obtained low interest USDA Revolving Loans and NACOG earned a USDA Rural Business Enterprise Grant (RBEG). Although these funds are currently active, and in distribution, the SR 260 and Broadband project will not be completed by the end of April 2014. The RBEG Resource Center with Broadband is scheduled for completion by October 1, 2014.

This report follows the Community Planning Guidelines that are identified in the Business Case Analysis and include five unique Deliverables completed ending April 15, 2014. The five deliverables are described on the following pages.

NACOG – SR 260 and Broadband, Arizona Broadband Project

1. Preparation of a Business Case Analysis

I. Work with the identified regions to assess the Inventory of broadband services and infrastructure currently available.

Deliverables: Community Data Sets identify the four regions and seven community's assets. See Appendix B. Broadband services were obtained from the Arizona Broadband Community Planning Map and by contacting the service providers to obtain the most current coverage and capacity. See Appendix C for a list of SR 260 and Broadband providers.

This report is intended to present data relative to the SR 260 Verde Valley road project.



Project: State Route 260 Access Plan – I-17 to Thousand Trails road
Project Cost: \$ 66M
Current Stage: Design Stage. No sub-contractors yet hired for engineering or construction.
Project Phases: Complete by 2018. Two years to Engineer. Two years to Construct.

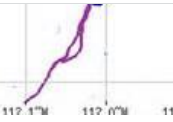
Contacts: Steve Ayers, Economic Development Director, Town of Camp Verde
Alvin Stump, ADOT District Engineer, Prescott, AZ.
Bill Bolin, Systems Technology Staffing, LLC – Broadband Planning
Jim Simms, ORAct – Broadband Technical Assessment

The CDS example above represents SR 260 and Broadband, Arizona. It can be retrieved using the Broadband Community Planning Map's Search on Places option. The SR 260 and Broadband report can be seen in the accompanying [Attachment: SR 260 and Broadband](#). A Statement of Work for SR 260 and Broadband can be seen in Appendix N.

The CDS provides:

Camp Verde, Arizona									
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781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800
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911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930
931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950
951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970
971	972	973	974	975	976	977	978	979	980
981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000

CDS data elements include:

Population in 2012: 10,925 (52% urban, 48% rural). Population change since 2000: +15.6%					
Males: 5,602	(51.3%)				
Females: 5,323	(48.7%)				
Median resident age:	44.0 years				
Arizona median age:	37.1 years				
Zip codes: 86322.					
Estimated median household income in 2011: \$35,871 (it was \$31,868 in 2000)					
Camp Verde:	\$35,871				
Arizona:	\$46,709				
Estimated per capita income in 2011: \$16,182					
Camp Verde town income, earnings, and wages data					
Estimated median house or condo value in 2011: \$116,107 (it was \$86,400 in 2000)					
Camp Verde:	\$116,107				
Arizona:	\$153,800				
Mean prices in 2011: All housing units: \$231,068; Detached houses: \$320,461; Townhouses or other attached units: \$231,718; Mobile homes: \$126,715					
Median gross rent in 2011: \$720.					
For population 25 years and over in Camp Verde:				Unemployment in July 2013:	
High school or higher: 85.3%				Here:	8.20%
Bachelor's degree or higher: 13.0%				Arizona:	8.30%
Graduate or professional degree: 4.3%					
Unemployed: 9.2%					
Mean travel time to work (commute): 24.9 minutes					

The hyperlinks relieve the user from having to utilize several search engines to obtain:

1. Utility Companies
2. Broadband Providers
3. State Highways for Right of Way, Clearances and Ordinances
4. Rail Roads for Commerce, Right of Ways
5. School Districts for Distance Learning and Educational Broadband services
6. Medical Centers within the region for Telemedicine

II. This Inventory will (and has) utilize(d) such data resources as the Broadband Community Planning Map, City-Data, ACA, DES, ReferenceUSA and other applicable data resources.

Deliverables: The Community Planning Map can be used to search the inventory assets of a particular community, community vs county and county vs state statistics. City-Data and ReferenceUSA serve as the data-pools for the demographics of a community. Arizona Commerce Authority (ACA) provides rural grants to rural Arizona and Department of Economic Security (DES) is researched for labor statistics. The actual deliverable is formulated in the CDS, as depicted above.

III. A Systems Requirements document will be prepared.

Deliverable: During the second of four meetings conducted with SR 260 and Broadband, a Systems Requirement document was prepared. The purpose of the document was to provide a mechanism for the users to record their current broadband services and identify their key objectives. The complete document used for the Systems Requirements can be seen in Appendix D. The actual questionnaire format is demonstrated on the following page.

The Systems Requirements documents (one for stakeholders and one for providers), identifies the limitations of what broadband services are currently available. The Technical Assistance consultant directs the activities and establishes the agendas for action meetings. The result is identification of the GAPs, and as these are determined, plans for demand aggregation and alternative system solutions will be presented along with budgets, time-frames and leadership.

NACOG County Broadband Gap Analysis:

The following GAP Analysis was extracted from the first NACOG BCA report.

“...NACOG should put in place action plans (see SR 260 and Broadband Project and the Rural Business Enterprise Grant (RBEG)). These action plans will require group leaders (see Appendices H and I) for Task Teams and leaders”. Due to limited resources, the SR 260 and Broadband Project along with the RBEG Resource Center with Broadband are the established projects for the NACOG Region.

- The results of the SR 260 and Broadband – Demand Aggregation show there is a Last Mile – Distribution problem. The SR 260 and Broadband Project is committed to addressing this issue. Further definitions are available in the Technical Assistance document.
- The RBEG Resource Center with Broadband project is intended to establish rural Resource Centers to encourage job development. Broadband is a critical element to make this program successful. A Broadband Checklist has been created to help a community identify gaps with current broadband services. See Appendix O.

EXAMPLE OF: SYSTEM REQUIREMENTS SUMMARY:

Name of Business: _____

Location (address): _____

Type of Business: _____
(Education, Medical, Government, Business, Public Safety)

Major Application(s): _____
(taxes, accounting, enrollment, admission/transfer/discharge, production, sales, marketing, etc.)

Describe Volume and Frequency: _____

Number of Users: _____ **Peak Time of Day/Night:** _____

Number of PCs in facility(s): _____

Description of Current Equipment (switches, servers, host computer(s): _____

Describe Current Broadband Configuration (fiber, DSL, T1 / Copper, DS3, etc.)

Age of Equipment: _____ years **Equipment under Maintenance:** Yes or NO circle

Terms of Contract and Contract Period: _____

Describe YOUR Major Goal: _____

In terms of bandwidth if known, what synchronous throughput capacity and/or speed (Mbps)...not how it is delivered (fiber vs copper vs wireless, Etc)

MUST Have	LIKE to Have
_____	_____
_____	_____

Please indicate your Name and contact information:

NAME: _____ **email:** _____

Phone: _____

IV. An analysis of potential demand aggregation and its incentive for private sector broadband investment in each region will be created.

Deliverable: The first meeting was with the Verde Valley Regional Economic Organization (VVREO). During the meeting the SR 260 and Broadband plan was delivered, as seen in the SR 260 attachment. Later a second meeting with the Stakeholders was conducted in Cottonwood, Arizona., This presentation focused on the DAP and SR 260 and Broadband for the region. System Requirements documents were provided to the SR 260 and Broadband Project team. These documents serve as the first step towards user and provider's Demand Aggregation.

The example document used for the Provider's Requirements can be seen in Appendix E. The map shown in Appendix K, shows the route of SR 260 via ADOT's engineering drawing. The actual questionnaire format is demonstrated on the following page.

Laying underground fiber is expensive. A combination of underground and overhead broadband, will, in many cases create the path to follow. APS is the power service provider for the area. Attachment L, APS Master License Agreement is a contract for broadband providers to erect equipment on APS's power poles.

EXAMPLE OF: NETWORK / FACILITY SUMMARY:

Name of Business: _____

Location (address): _____

Business (Public or Private) (circle one) **Public** **Private**
International, National, Regional, Local (circle best description)

Arizona Corporation Commission or FCC registration type: (CLEC, ILEC, common carrier, unregistered, etc.) _____

Local Contact Person (name, title email, phone): _____

Description of service delivery method: (fiber, DSL, T1 / Copper, DS3, etc.) _____

General Description of Customers: (government, education, health, base businesses) _____

List Interconnected Providers: _____

Radius of Services: _____ miles from downtown SR 260 and Broadband Az., List Connected Communities: _____

Location of Point Of Presence(s) (CO, POP, COLO, ETC): _____

Path of Inter Office Fiber (place on the Map color coded)

Description of Current Equipment Both Intra-building and Field (switches, DSLAM, amplification, repeaters, servers) : _____

Describe Current Broadband Configuration

Age of Equipment: _____ years **Equipment under Maintenance:** Yes or NO circle

Terms of Contract and Contract Period: _____

V. A survey to gather data to be utilized in generating a report on current adoption of broadband services to constitute desired levels of broadband capacity and services.

Deliverable: A survey was produced and distributed via email to the user groups within the four regions. The survey can be seen in Appendix F. Whereas the actual order of preferences for the SR 260 and Broadband project are focused on Economic Development, Telemedicine, Education and Public Safety. This summation does not differ significantly from the responses from the survey.

NACOG County broadband application rankings (highest to lowest priority):

1. Economic Development
2. Telemedicine
3. Public Safety
4. Education

Overall ranking of the four counties:

1. Economic Development
2. Telemedicine
3. Public Safety
4. Education

2. Grant Opportunity Identification

1. Research, identify and qualify feasible grant opportunities for funding or partial funding of middle mile conduit build outs utilizing SB1402 or other digital capacity (broadband) improvement projects...including the significance of AZ-USDA recommending Poverty Rates by Census Tracts, later incorporated into the Community Broadband Map.

Deliverable: Although tThere has been no middle mile conduit build out for the SR 260 and Broadband project, because there is not a middle mile problem in the area. Instead there is a last mile distribution problem. This includes businesses along SR 260, where there is a copper T1 line coming from the outside into Out of Africa, one of the larger employers in the region. There is, however, a ConnectAmerica Fund II for broadband in rural Arizona. NACOG's eligible counties include Apache, Coconino, Navajo and Yavapai Additional grants can be seen in Appendix G.

"There have been two rounds of Phase I support. In the first round of Phase I (conducted in 2012), two carriers (Frontier and CenturyLink) stated that they planned to deploy in Arizona. CenturyLink accepted \$509,175, while Frontier accepted \$254,200. The Commission has not put out county-level data for the first round of Phase I, but state-level data is available at <http://www.fcc.gov/maps/connect-america-fund-caf-phase-i>. For the second round of Phase I (conducted in 2013), **CenturyLink accepted \$4,624,275 to deploy to eight counties** (NACOG, **Coconino**, Gila, Maricopa, Pinal, Santa Cruz, **Yavapai**, and Yuma), while Frontier accepted \$7,012,725 to deploy to three counties (**Apache**, Mohave, and **Navajo**). A map of planned second round deployments is available at <http://www.fcc.gov/maps/connect-america-fund-phase-i-round-two>. A note of caution - these are just planned deployments, and carriers are permitted to alter their deployment plans upon providing proper notice. Thus, a given county may end up receiving more or fewer locations than shown in initial deployment plans."

Representative Number : TSR54

3. Broadband Committees

1. Continue expansion of the NACOG Four County broadband committee. When a project is determined, as in the case of SR 260 and Broadband, and RBEG with Broadband: Action Teams are much more effective than general broadband committees.

Deliverable: The list of the NACOG Four County Broadband Committee members can be seen in Appendix H. The SR 260 and Broadband Project Broadband Members have formed an action team to construct demand aggregation and the committee consists of stakeholders and providers. This committee can be seen in Attachment I.

4. Broadband focused Webpage(s)

1. Publication of pages is expected to occur at the inception of the approved activities. There will be periodic updates.

Deliverables: There have been periodic updates to the client's website. NACOG has directed the other three counties to also update their websites with the updated material provided. These updates can be seen in Appendix J.

Appendix A

ASET / NTIA QUARTERLY REPORT (Q4 2013)

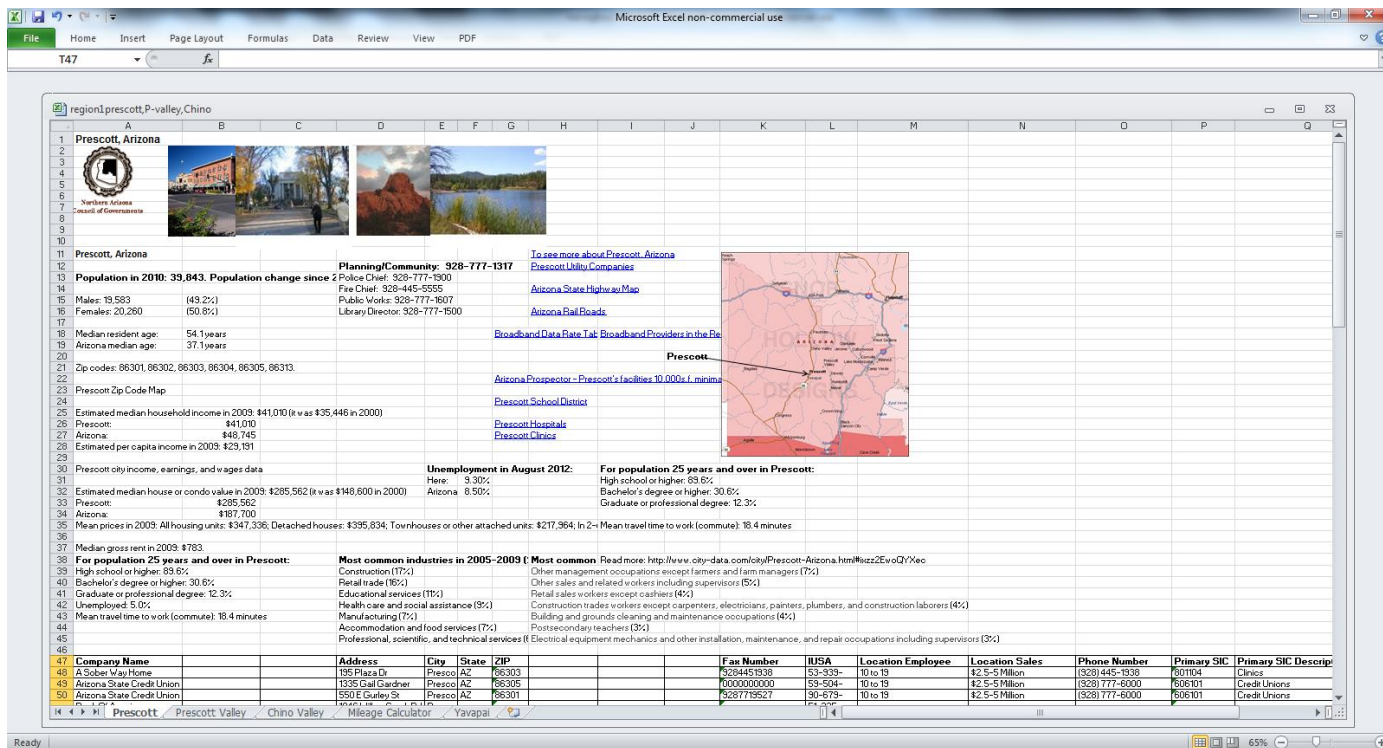
This report is intended to describe action against the tasks as described in the Broadband Community Planning Document: Exhibit 2 – Statement of Work (SOW) for the following three rural regions. The SOW includes four tasks. This report identifies activities for the period reported.

Northern Arizona Council of Governments (NACOG). Four counties: Apache, Navajo, Coconino and Yavapai.

Broadband Community Planning Activities (GOALS vs ACCOMPLISHMENTS):

1. **Preparation of a Business Case Analysis** results:
 - a. Work with regions and projects begun.
 - b. Inventory assets (Community Data Sets) for four regions conducted and updated.
 - c. Systems Requirements document prepared for SR 260 project.
 - d. Demand aggregation of providers begins with list of regional providers obtained from the broadband map and then Tech/Assistance will follow up.
2. **Grant Opportunities:** Working with USDA we have identified the following grants for first and second quarter of 2014:
 - a. USDA-RBEG Grant 2013-2014 awarded for Regional Resource Centers including Broadband Systems Requirements. Includes NACOG & CAG.
 - b. Community Connect Grant
 - c. Distance Learning and Telemedicine Grant
 - d. Revolving Loan Fund (RLF) for the Verde Valley region
 - e. Arizona Commerce Authority grants and funding for rural Arizona
 - f. Economic Development Authority (EDA, U.S. Dept. of Commerce)
3. **Broadband Committees:** NACOG formed a general Broadband Sub-Committee. Project Chair was turned over to Pinetop-Lakeside. To better manage specific projects, Project Groups have been constructed. Upcoming meeting with NACOG's Economic Development Coalition on February 2, 2014, in Flagstaff, AZ.
 - a. **Project SR 260:** An ADOT project with road construction and broadband running 12-17 miles from Camp Verde to Cottonwood, AZ.
 - b. **Committee:** Steve Ayers (Econ-Dev-Director, Camp Verde) Leader, Jodie Filardo (Econ-Dev-Director, Clarkdale), Community Leader, Patrick Burns (CIO-Yavapai College) Regional Tech-Support, Bill Bolin (Community/Economic Development) Broadband Community Consultant, Jim Simms (Technical Assistance), Provider Liaison.
4. **Broadband Focused Webpage(s):** Two updates provided to NACOG.
 - a. NACOG Broadband One Page-Phase II, see attachment 1.
 - b. Email to NACOG for new link: January 2014: Teri and Vicki, Would you please have your NACOG webpage link to:
http://azbroadband.gov/Resources/Arizona_Rural_Initiatives.html.

Appendix B: Community Data Sets



The image above is a screen shot of the Community Data Set for NACOG County. The data includes:

1. Hyperlinks to many of the cities/towns in NACOG County.
2. A map of NACOG County with locations of cities/towns.
3. A comparison of NACOG County to Arizona.
4. Major utility companies in servicing the County.
5. A tab for each City: Bisbee, SR 260 and Broadband, Sierra Vista, Wilcox, Tombstone, Haachuca City.

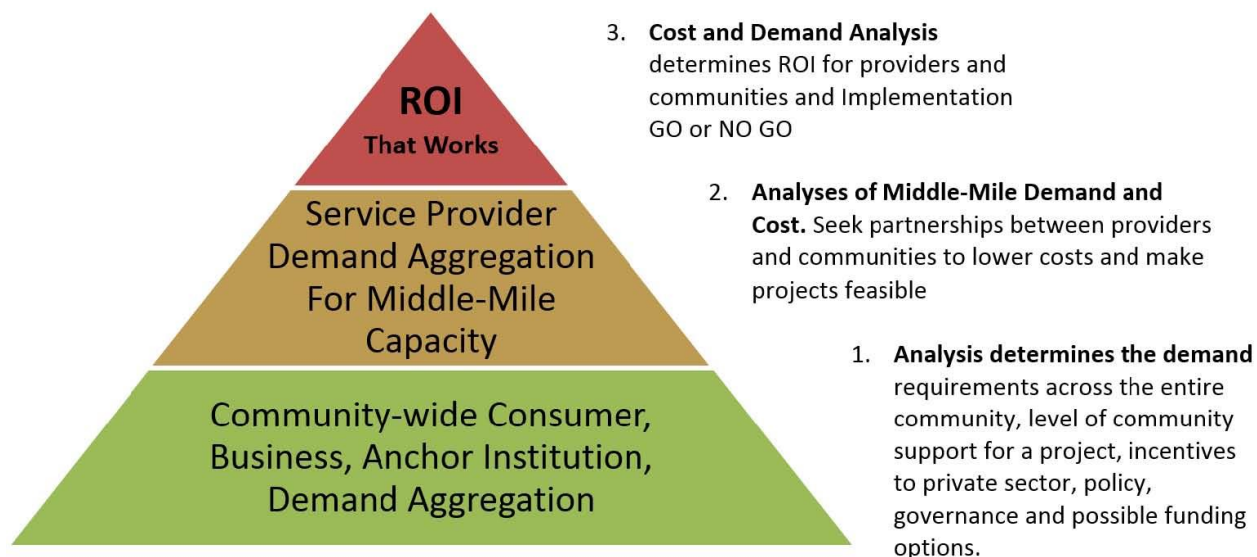
The Arizona Broadband Community Planning Map will display the NACOG communities and regions in great detail: <http://broadbandmap.az.gov/CommunityPlanningMap/>

Appendix C – A list of SR 260 and Broadband’ Service Providers

Company Name	Company Website	Contact Name	Contact Telephone	Contact Email	
Airespring, Inc.	www.airespring.com	Sales	818-786-8990	sales@airespring.com	
AT&T	www.att.com	Gary Sima	602-670-9200	gary.sima@att.com	
BeamSpeed	www.beamspeed.com	Sales	928-343-0300	sales@beamspeed.com	
Bolt Internet	www.boltinternet.com	Sales	928-717-2658	sales@boltinternet.com	
Bullseye Telecom, Inc.	www.bullseyetelecom.com	John Dwyer	877-438-2855	sales@bullseyetelecom.com	
Cable One	www.cableone.net	Aldo Casartelli	928-445-4511	aldo.casartelli@cableone.biz	
CenturyLink	www.centurylink.com	David Dameron	520-861-0322	david.dameron@centurylink.com	
CIS Wireless Broadband	www.cis-broadband.com	Steve Clark	520-458-0293	stclark@clarkinfosys.com	
CITYNET	www.citynet.net	Sales	800-881-2638	info@citynet.net	
CommSpeed	www.commspeed.net	Sales	928-233-1111	info@commspeed.net	
Cox Arizona Telecom, LLC	www.cox.com	David Daniels	866-701-8737	daviddaniels177@yahoo.com	
Floor 13 Access	www.floor13access.com	Marty Schwarzkopf	602-920-3291	marty@floor13access.com	
Freeway Networks		Nick Wold	602-692-4182	bnwold@gmail.com	
Frontier Communications	www.frontier.com	Mark Jeffries	928-537-6660	Mark.Jeffries@ftr.com	
GovNet	www.govnet.net	Pat Barringer	480-424-1410	pat.b@govnet.net	
Grand Avenue Broadband	www.grandavebb.com	Sales	623-640-7883	grandavebb@grandavebb.com	
Granite Telecommunications, LLC	www.granitenet.com	Sales	866-205-8928	custserv@granitenet.com	
Greenfield Communications	www.egreenfield.com	Sales	888-230-0020	sales@egreenfield.com	
GSWTelecom	www.gswtelecom.com	Andy Wieser	520-488-6675	andy.wieser@gswtelecom.com	
HP-AZ.net	www.HPAZ.net	Curt Vincent	520-732-2208	sales@hpaz.net	
InfoWest	www.infowest.com	Sales	435-674-0165	info@infowest.com	
Integra Telecom	www.integratelecom.com	Chip Gorsuch	877-953-7747	chip.gorsuch@integratelecom.com	
Last Mile Research	www.lastmileresearch.com	Sales	415-462-1775	sales@lastmileresearch.com	
Logicalis	www.us.logicalis.com	Brian Arland	602-369-7409	brianarland@us.logicalis.com	
MegaPath	www.megapath.com	Sales	480-467-3237	sales@megapath.com	
MTE Telecom	www.mtecom.net	Sales	800-462-4523	info@mtecom.net	
NI Solutions	www.nisolution.com	Irshad Ansari	317-616-3301	iansari@nisolution.com	
Red Rock Telecom		Jack Pleiter	480-745-7902	jack@redrocktelecom.com	
RuralNet Wireless	www.ruralnetwireless.com	Bob Enyeart	866-446-5882	mail4liberty@yahoo.com	
Schurz Communications, Inc.	www.schurz.com	Sales	574-247-7237	info@schurz.com	
Simply Bits	www.simplybits.com	Sales	520-545-0400	sales@simplybits.com	
Simply The BeSST, LLC		Travis Foster	602-295-7305	travis@stbaz.com	
Sprocket Communications	www.getsprocket.net	Sales	520-740-9700	info@getsprocket.net	
SRP Telecom	www.srpnet.com	Jeff Taylor	602-236-8777	wireline@srpnet.com	
Suddenlink	www.suddenlink.com	Glen Clark	928-774-5336	glen.clark@suddenlink.com	
Swift Wireless Internet	www.swiftwireless.net	Sales	928-634-7828	sales@swiftwireless.com	
Table Top Telephone Company	www.tabletoptelephone.com	Sales	520-387-5600	genofc@tabletoptelephone.com	
TDS Telecom	www.tdstelecom.com	Sales	866-448-0071	bizcenter@tdstelecom.com	
Transcend Broadband	www.transcendbroadband.net	Sales	520-413-4861	info@transcendbroadband.com	
Transworld Network	www.twncorp.com	Sales	800-253-0665	customersvc@twncorp.com	
tw telecom	www.twtelecom.com	Brenda Beall	602-574-2937	brenoffire@gmail.com	
UNSi.net	www.unsi.net	Sales	855-888-8674	info@unsi.net	
USA Digital Communications	www.usad.com	Sales	888-872-3787	info@usad.com	
Valley Telecom	www.vtc.net	Mike Fortenberry	800-421-5711	mike.fortenberry@vtc.net	
Venicom	www.venicom.com	Ed Parker	602-370-4225	ed.parker@venicom.com	
Webhiway Communications	www.webhiway.com	John	520-612-6125	john@webhiway.com	
Windstream	www.windstreambusiness.com	Steve Godsey	602-429-3442	Steven.Godsey@windstream.com	
WydeBeam	www.wydebeam.com	Sales	480-964-4749	sales@wydebeam.com	
XO Communications Services, Inc.	www.xo.com	Sales	800-815-6223	web fill-in form	
Zayo Enterprise Networks	www.zayo.com	Sales	866-364-6033	sales@zayo.com	
Zona Communications	www.zonacommunications.com	Sales	623-455-4555	customerservice@teamzona.com	

SR 260 and Broadband, Arizona Broadband Project

Systems Requirements Specifications



This diagram is presented in the Broadband Business Case Analysis. Although Middle Mile does represent an operational weak-point, the SR 260 and Broadband project is more focused on a Last Mile and Distribution problem to meet consumer demand. To better understand the demands of the consumer, it is essential that the consumer define their system's requirements. In an effort to help with this activity, we are requesting the following information be completed to the best of ability and sent to:

Lisa Marra, LMarra@NACOG.az.gov and copy Bill Bolin: billbolin@hotmail.com

Purpose: Better serve rural Arizona (SR 260 and Broadband, AZ) with broadband capabilities and capacities to support: 1) Economic Development (Jobs), 2) Education, 3) Telemedicine and 4) Public Safety.

Scope of Work: To work with stakeholders and complete a picture of their business demands for broadband infrastructure that can be effectively communicated to service providers, whereas the service providers will produce cost effective alternatives to meet the stakeholder's demands.

Appendix D – Systems Requirements continued...

SYSTEM REQUIREMENTS SUMMARY:

Name of Business: _____

Location (address): _____

Type of Business: _____
(Education, Medical, Government, Business, Public Safety)

Major Application(s): _____
(taxes, accounting, enrollment, admission/transfer/discharge, production, sales, marketing, etc.)

Describe Volume and Frequency: _____

Number of Users: _____ **Peak Time of Day/Night:** _____

Number of PCs in facility(s): _____

Description of Current Equipment (switches, servers, host computer(s): _____

Describe Current Broadband Configuration (fiber, DSL, T1 / Copper, DS3, etc.)

Age of Equipment: _____ years **Equipment under Maintenance:** Yes or NO circle

Terms of Contract and Contract Period: _____

Describe YOUR Major Goal: _____

In terms of bandwidth if known, what synchronous throughput capacity and/or speed (Mbps)...not how it is delivered (fiber vs copper vs wireless, Etc)

MUST Have _____ **LIKE to Have** _____

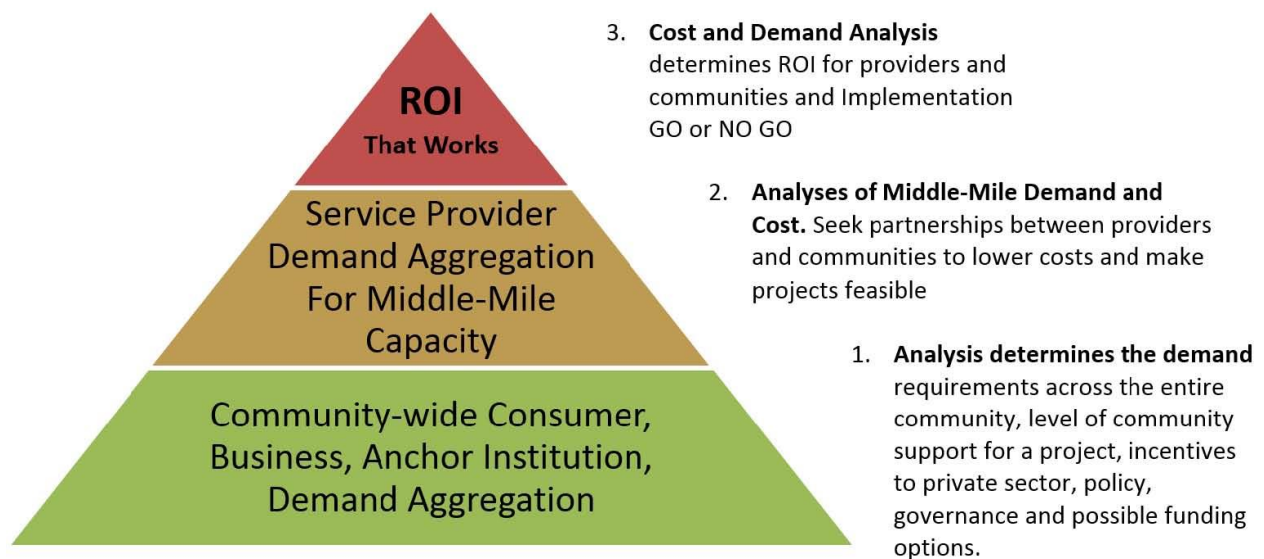
Please indicate your Name and contact information:

NAME: _____ **email:** _____

Phone: _____

SR 260 and Broadband, Arizona Broadband Project

PROVIDER'S Systems Requirements Specifications



This diagram is presented in the Broadband Business Case Analysis. Although Middle Mile does represent an operational weak-point, the SR 260 and Broadband project is more focused on a Last Mile and Distribution problem to meet consumer demand. To better serve the demands of the consumer, it is essential that Carriers define their network reach. In an effort to help with this activity, we are requesting the following information be completed to the best of ability and sent to:

Lisa Marra, LMarra@NACOG.az.gov, copy Jim Simms jim.simms@centurylink.net and Bill Bolin: billbolin@hotmail.com

Purpose: Better serve rural Arizona (SR 260 and Broadband, AZ) with broadband capabilities and capacities to support: 1) Economic Development (Jobs), 2) Education, 3) Telemedicine and 4) Public Safety.

Scope of Work: To work with stakeholders and complete a picture of their business demands for broadband infrastructure that can be effectively communicated to service providers, whereas the service providers will produce cost effective alternatives to meet the stakeholder's demands.

NETWORK / FACILITY SUMMARY:

Name of Business: _____

Location (address): _____

Business (Public or Private) (circle one) **Public** **Private**
International, National, Regional, Local (circle best description)

Arizona Corporation Commission or FCC registration type: (CLEC, ILEC, common carrier, unregistered, etc.) _____

Local Contact Person (name, title email, phone): _____

Description of service delivery method: (fiber, DSL, T1 / Copper, DS3, etc.) _____

General Description of Customers: (government, education, health, base businesses) _____

List Interconnected Providers: _____

Radius of Services: ____ miles from downtown SR 260 and Broadband Az., List Connected Communities: _____

Location of Point Of Presence(s) (CO, POP, COLO, ETC): _____

Path of Inter Office Fiber (place on the Map color coded)

Description of Current Equipment Both Intra-building and Field (switches, DSLAM, amplification, repeaters, servers) : _____

Describe Current Broadband Configuration

Age of Equipment: _____ years **Equipment under Maintenance:** Yes or NO circle

Terms of Contract and Contract Period: _____

Appendix F- Broadband User Survey of Applications

Applications Priority as defined by NACOG's Sub-Committee (as of 2/8/2013)

1. Economic Development
2. Education
3. Telemedicine
4. Public Safety

Appendix G: Digital Arizona Program Broadband Grants and Resources

DAP Broadband Grants & Resources

Under the auspices of the NACOG Broadband Steering Committee, an extensive **DAP Broadband Grants & Resources Guide** has been developed for **Digital Arizona Program (DAP - <http://azbroadband.gov/>)**. Please reference the separate standalone document who's Table of Contents follows:

DAP Broadband Grants & Resources Guide

Table of Contents

Preface

Broadband Grants Seekers Introduction

State of Arizona Grant Opportunities

Arizona Strategic Enterprise Technology Office (ASET)

Arizona Governor's Office

Arizona Department of Education

Arizona State Library, Archives and Public Records

Arizona Department of Homeland Security

Arizona Department of Commerce (ACA)

Science Foundation of Arizona (SFAz)

Arizona Corporation Commission (ACC)

Arizona Telemedicine Program (ATP)

Arizona Grantmakers Forum (AGF)

Federal Government Grant Opportunities

General Federal Grant Sources

U.S. Dept. of Agriculture (USDA) Rural Utility Services (RUS)

Federal Communications Commission (FCC)

U.S. Dept. of Commerce (DOC) National Telecommunications & Information Administration (NTIA)

U.S. Dept. of Commerce (DOC) Bureau of Economic Analysis

Education & Libraries Specific

Telehealth Specific

Public Safety Specific

Small Business Innovation Research (SBIR)

Small Business Technology Transfer (STTR)

Small Business Administration (SBA) Programs

Other Grant Opportunities

Foundations and Trusts - Arizona Specific

Foundations and Trusts - National

Appendix G continued: **DAP Broadband Grants & Resources Guide**
Table of Contents (Continued)

Broadband Resources

Federal Resources

State Digital Capacity Plans and Resources

Arizona State Resources

National Nonprofit Organizations

National Trade Associations

Arizona Nonprofit Organizations and Trade Associations

National eLearning and Technology in Education Resources

Arizona eLearning and Technology in Education Resources

National Telehealth Resources

Arizona Telehealth Resources

National eGovernment Resources

Arizona eGovernment Resources

National Discovery, Innovation and Research Resources

Arizona Discovery, Innovation and Research Resources

National Smart Energy and Environmental Resources

Arizona Smart Energy and Environmental Resources

National Public Safety Communications Resources

Arizona Public Safety Communications Resources

National Native American Resources

Arizona Native American Resources

Arizona Statistical Resources

Community Toolkits, Economic and Financial Modeling

Appendix H – NACOG Broadband Committee Members

Apache County:	Tom Hansen Utility Solar Engineering PO Box 457 255 S. Washington St. Johns, AZ 85936 928/337-4638 theengineer@frontiernet.net	Navajo County: David Swietanski Town of Pinetop-Lakeside (sorry I have no contact info for him) Rod Stevens Town of Pinetop-Lakeside 1360 N. Neils Hansen Ln. Lakeside, AZ 85929 928/368-8696 Ext 240 rstevens@ci.pinetop-lakeside.az.us
Coconino County:	Mike Makowski Innovative Consulting Systems PO Box 1973 Page, AZ 86040	
Yavapai County:	Jodie Filardo Town of Clarkdale PO Box 308 928/645-8139 Clarkdale, AZ 86324 Jodie.filardo@clarkdale.az.us Mike Ward City of Sedona MWard@sedonaaz.gov 928/639-2505 John Smith City of Sedona 928/203-5080 JSmith@sedonaaz.gov	Linda Hatch PO Box 406 Chino Valley, AZ 86323 928/636-2646 lhatch@chinoaz.net
Coconino County:	Kris Estes Coconino County 110 E. Cherry Ave. Flagstaff, AZ 86001 928/679-7930 kestes@coconino.az.gov	
Consultants:	Bill Bolin STS Cave Creek, AZ 480-563-8553 billbolin@hotmail.com	Jim Simms ORAct Phoenix, AZ 602-991-7714 jim.simms@centurylink.net

Appendix I: SR 260 and Broadband Project Members

Executive Director of NACOG: Mr. Chris Fetzer

Project Director: Teri Drew

Project Leader: Bill Bolin

Board President: Tom Thurman – Chair of Yavapai County Board of Supervisors

Fiduciary Officer: Vicki Mastriani Fiscal Officer

Business Coordinator: Ann Clark

Director of Administration: Tonya Hiatt

Administrative Assistant: Kris Mass

Partners: Yavapai Community College, City of Prescott, City of Cottonwood, Verde Valley One-Stop Workforce Staff, NACET, SCORE, Embry Riddle Aeronautical University, Systems Technology Staffing, LLC.

The project will be directed by Bill Bolin. Bill has successfully served as a consultant to CCEDC for the past year. His experience consulting to NACOG in the development of their Resource Center will be invaluable for this project. Bill will be responsible for hiring staff, overseeing scheduling of consultants and training and producing deliverables.

Faculty of Yavapai Community College: We will coordinate with YCC and guide clients to existing courses when appropriate. We will also engage faculty in delivering training programs.

NACOG - Four Counties (NACOG - FOUR COUNTIES)

Broadband Community Planning November 2013 – April 2014

NACOG - FOUR COUNTIES was asked to provide four regions where broadband projects and activities will generate and/or compliment:

Region 1: Ash Fork

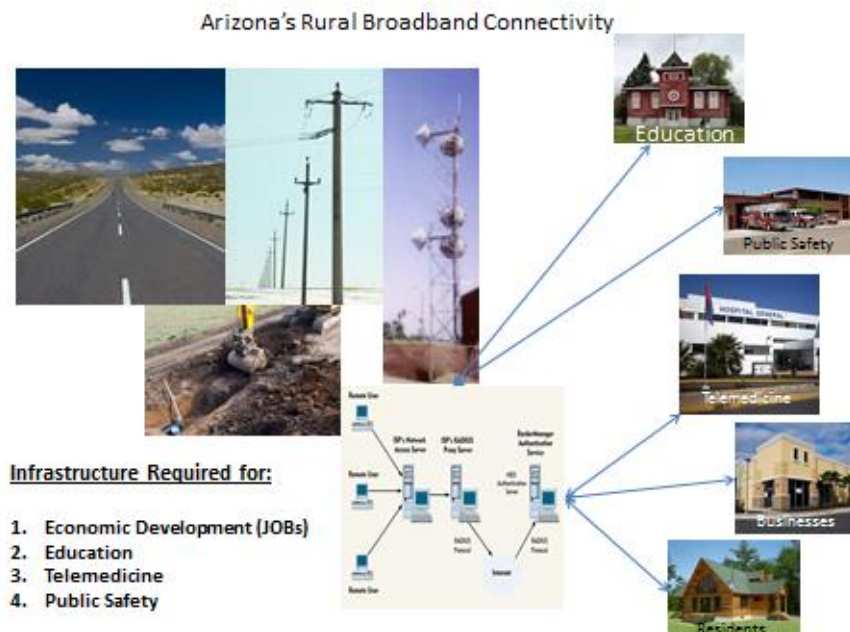
Region 2: Williams

Region 3: Verde Valley Regional Economic Organization (VVREO) with SR 260 and Broadband Project

Region 4: Winslow

Although Planning and Technical Assistance are critical elements to the broadband project, there is now the beginning of concentration on programs that can provide the essential infrastructure to begin actual construction of planned projects. There is a three point program approach:

1. **Community Planning** – an inventory of current assets
2. **Technical Assistance** – evaluation of needed requirements by the region and proposed system solutions to meet the demands/requirements.
3. **Future Infrastructure** – requirements to implement the solution(s).



This picture shows road construction with trenching for conduit/fiber, with connectivity to existing poles and microwave to provide broadband coverage for schools, businesses, public safety, medical and residents. All users are tied into a network to provide the best affordable coverage for the region / community.

Appendix J: Website(s) updates

NACOG - Four Counties (NACOG - FOUR COUNTIES)

Broadband Community Planning November 2013 – April 2014

Web Update January – March 2014

NACOG - FOUR COUNTIES was asked to provide four regions where broadband projects and activities will generate and/or compliment:

Region 1: Ash Fork

Region 2: Williams

Region 3: Verde Valley Regional Economic Organization (VVREO) with SR 260 and Broadband Project

Region 4: Winslow

Although Planning and Technical Assistance are critical elements to the broadband project, there is now the beginning of concentration on programs that can provide the essential infrastructure to begin actual construction of planned projects. There is a three point program approach:

1. **SR 260 and Broadband, Arizona** is the immediate Project. There have been meetings to identify the current assets, formulate Stakeholders' System Requirements and meetings with Broadband Service Providers to determine their services, capacities and alternative solutions (GAP Analysis) to meet the Stakeholder's System Requirements.

2. **Future Infrastructure** – Service Providers provide alternatives. Stakeholders determine best solution for implementation. Making rural broadband sustainable for business and resident retention, new business attraction, better education, tele-health and public safety.

What does it Really look like?



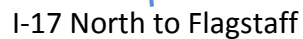
Trenching



Feeder Cables: Substation to Switch Cabinets, distribute to transformers
Broadband Providers' Conduit

These pictures show road construction with trenching for power, conduit/fiber, with connectivity to existing poles and microwave to provide broadband coverage for schools, businesses, public safety, medical and residents' usage. All users are tied into a network to provide the best affordable coverage for the region / community.

State Route 260 with Broadband Connectivity



- The Plan proposes 7 intersections

Appendix L - Arizona Public Service's Master License Agreement



Date: October 25, 2013

Colin Barleycom
Arizona Public Service
Engineering Supervisor
UC Construction & Project Management
P.O. Box 53933, M.S. 3876
Phoenix, AZ 85072-3933

APPLICATION PROCEDURE FOR APS MASTER LICENSE AGREEMENT

To become a qualified applicant to attach to APS poles, a request for a "Master License Agreement for Communication Attachments to APS Poles" should be sent in letter form to:

Attn: Colin Barleycom
Arizona Public Service Company
P. O. Box 53933, MS 3876
Phoenix, Arizona 85072-3933

1. This letter must include the most recent information available on the following:
 - a. Certificate of Good Standing from the Arizona Corporation Commission.
 - b. A copy of your organization's Annual Report, as required by and filed with the Arizona Corporation Commission.
 - c. A copy of all city and/or county and state authorizations entitling the applicant to engage in communications operations in the area(s) being served.
2. This letter must also include:
 - a. A statement of the general geographical area(s) to be served.
 - b. A statement of the specific geographical area where initial construction is to take place and the approximate date construction is scheduled to commence.
3. If, after receipt, the above information is found to be acceptable, Arizona Public Service Company will forward a Master License Agreement for Communication Attachment to APS Poles to the applicant for execution.
4. Prior to Arizona Public Service Company's execution of the Agreement the following must be received:
 - a. A certificate evidencing the insurance coverage as set forth in Appendix B of the Agreement.
 - b. *If requested by APS*, the appropriate level of financial security. This may be provided in the form of a letter of credit or an assignment of monies.

Appendix M - NACOG's Speed Analysis

Digital Arizona Program Speed Analysis

Some of the key broadband initiatives that we will be working together to support include:

1. The Community Planning portion of the Digital Arizona Program wrapped up on December 31, 2012. ASET has requested additional detail reporting. The final report is currently in preparation now.
2. Additional statistics to support the need for rural broadband in Arizona include:
Arizona ranks 10th in the nation in internet speeds - not too bad.
The median upload speed in Arizona is 0.9 megabits per second - this is really bad.
The FCC set a minimum broadband speed standard of **4 megabits per second - (Mbps) download and 1Mbps upload.**

NACOG's Counties download and upload speeds:

	<u>Average Download</u>	<u>Average Upload</u>
Apache	2.1Mbps	330Kbps
Navajo	2.2Mbps	359Kbps
Coconino	4.7MBps	694Kbps
Yavapai	2.06Mbps	1.1Mbps

Results from speedmatters.org by county / zip codes.

3. If you want to take a speed test for your region, business, health care facility, school or public service, go to:

<http://www.digitalarizona.gov/Survey/StandardInArizonaQuestion.html>

Or: www.speedmatters.org and select Arizona.

Your feedback will be greatly appreciated.

4. As mentioned before, the next phase of the project is to engage Technical Assistance. This is where benchmarks for broadband enhancements/deployments along with working with service providers will occur. We will need your help in identifying the most critical programs in your regions, e.g., Linda identified Public Safety for Chino Valley, Rod identified Public Safety for Pinetop/Lakeside and Tele Medicine was identified for rural clinics in the northern NACOG region during our meeting in Flagstaff.

Digital Arizona Program Speeds continued...

5. Benchmarks for applications (not inclusive):

<u>Upstream / Downstream speeds</u>		<u>Applications</u>
500Kbps	1Mbps	VOIP, Web browsing, streaming music, low quality video
1Mbps	5Mbps	Web browsing, email, IPTV, file sharing, digital broadcast, streaming music
5Mbps	10Mbps	File sharing, IPTV, video streaming, HD video downloading
5Mbps	10Mbps	Medical file sharing, remote diagnosis, remote education, control/management
10Mbps	100Mbps	Telemedicine, educational services, broadcast video SD & HD, IPTV HD, HD telepresence, HD surveillance, Smart/Intelligent building control
100Mbps	1Gbps	HD telemedicine, multiple education services, full HD broadcast video, full IPTV - channelsupport, HD video on demand, gaming (immersion)

Source: California Broadband Task Force. The State of Connectivity: Building Innovation Through Broadband, Jan. 2008. Update material November 2010.

6. These benchmarks and the current speeds listed above provide us with targets, goals objectives to make rural Arizona regions and communities more competitive, retain residents and businesses and provide a higher standard for "quality of life".

Take a look at your current environment and let us know where you believe the best enhancements and ROI are for your region / community.

We will be preparing a sub-committee meeting. It looks like the end of January or the beginning of February. Looking forward to seeing or hearing from you.

Bill

Appendix M –continued...NACOG’s Downstream and Upstream continued...

Speed Range	Applications
1 Mbps - .5 Mbps	Voice over Internet Protocol telephony, Basic email, Web browsing - (simple sites), Streaming music, Small display, Low quality video (highly compressed)
5 Mbps - 1 Mbps	Web browsing (complex sites), Email (larger file size attachments), Remote video surveillance, IPTV (Standard Definition), File sharing (small/medium), compressed broadcast video (1 screen), Streaming music.
10 Mbps - 5 Mbps	File sharing (large), IPTV-Standard Definition (3 TVs), Broadcast Standard Definition video, Video streaming (2-3 TVs), High Definition video downloading.
10 Mbps - 5 Mbps	Medical file sharing (basic), Remote diagnosis (basic), Digital Learning & Remote education (Common Core standards), Building control and management.
100 Mbps - 10 Mbps	Telemedicine , Educational Services (small schools), Broadcast video HD and some High-Definition, High quality tele-presence (distance learning), High Definition surveillance, Smart-Intelligent building control.
1 Gbps - 100 Mbps	High Definition telemedicine , Multiple Student Educational Services (large schools), Uncompressed High - Definition video, HD-IPTV (Many TV’s), High Definition - Video on Demand. Gaming (immersion). 3D modeling.

An FCC National Broadband Plan milestone, by 2015 is, “100 million U.S. homes should have affordable access to actual download speeds of 50 Mbps and actual upload speeds of 20 Mbps.” The National Broadband Plan further states: “The United States must lead the world in the number of homes and people with access to affordable, world-class broadband connections. As such, 100 million U.S. homes should have affordable access to actual download speeds of at least 100 Mbps and actual upload speeds of at least 50 Mbps by 2020, according to the national plan. For Community Anchor Institutions, the National Broadband Plan states: “Every American community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions such as schools, hospitals, and government buildings.” We have a long way to go.

Modern Application Speed Recommendations above compared to NACOG’s Average County Speeds per county:

Apache	<u>Down</u> 1.42kbps	<u>Up</u> 411kbps	Coconino	<u>Down</u> 4.41kbps	<u>Up</u> 791kbps
Navajo	<u>Down</u> 3.8kbps	<u>Up</u> .097kbps	Yavapai	<u>Down</u> 2.42kbps	<u>Up</u> 565kbps

NACOG’s average Down Load Speed is 4.03Mbps and Up Load Speed is 466kbps. While the Down Load speed is slightly higher than that of FCC’s Down Speed for Arizona: Down Load is 3Mbps and Up Load is 768kbps, the NACOG region is below the speeds required to support the major applications. As can be seen from the speed test averages per county within the NACOG region, there is no comparison to the speed demands of the above applications.

Systems Technology Staffing, LLC

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Cave Creek, Arizona 85331

**Broadband Local Planning Assistance to
Arizona Communities
Statement of Work (SOW):**

This SOW references the SR 260 and Broadband project in the Verde Valley, an identified region within the NACOG Community Planning and Technical Assistance process for Rural Arizona Broadband.

On February 26, 2014 a teleconference among the following participants was conducted:

Teri Drew, Regional Director NACOG
Jodie Filardo, Economic Development Clarkdale, AZ
Steve Ayers, Project Manager for SR 260 & Broadband, Camp Verde, AZ
Patrick Burns, CIO Yavapai Community College
Brent Kinney, CIO Town of Cottonwood, AZ
Casey Rooney, Economic Development Cottonwood, AZ
Jim Simms, Technical Assistance Consultant for Digital Arizona Program (DAP)
Bill Bolin, Community Planning Consultant for DAP

Results of teleconference:

- Steve Ayers presents the current status of SR 260 project.
- Jacob Engineering is contracted to complete the first 30% of Engineering work. They will not be conducting additional engineering / construction work.
- Nearly 100% of engineering could be complete by May-June 2014.
- Clarify who pays construction and conduit costs for broadband (providers, public, ADOT, or is it built into construction costs by contractor?).
- Work with SR 260 towns, businesses, government to obtain regional support for broadband. This includes NACOG, VVREO, YCC, Hospital(s), Public Safety and others.
- Find out what GovNet has done and will be doing within the region.
- Possible formulation of a P3 – Public, Private, Partnership.
- The hospital requires satellite facilities and telemedicine, Out of Africa requires broadband for tourism (hotels/motels), local businesses require broadband for sales and supply chains, the towns and local government require additional broadband capacity.

Bill Bolin

Bill Bolin, V.P. Systems Technology Staffing

February 26, 2014

Date

This electronic signature is authorized by Bill Bolin

Appendix O: a Broadband Checklist

USDA - RBEG Federal Grant Broadband Checklist

The major problem for rural America is RETENTION – of businesses and residents. Too often base industry businesses leave their rural roots because of competitive pricing and most recently because of a lack of skilled employees. The competition factor can be somewhat overcome by better operational practices, whereas the skill sets obtained by local residents is only overcome by access to educational programs and services. This includes better broadband service along with education conducted through locally planned workshops and one-on-one business consulting to encourage entrepreneurs to open and sustain a business in a rural location.

The purpose of the funding sought in this proposal is to increase the number of entrepreneurs in the six rural counties we have identified (Apache, Navajo, Coconino, Yavapai, Pinal and Gila) through the development of additional business centers. NACOG and CCEDC plan to do this by outreaching to EDOs and community leaders and determining whether a need for a business center exists in their area. Rather than working directly with residents, interested communities will receive support to establish their own business centers. This support will enable communities to:

1. Develop an implementation plan.
2. Provide advice along the way.
3. Train personnel to consult and facilitate workshops.
4. Provide access to our materials related to consulting and workshop delivery.

This current USDA - RBEG federal grant is intended to assist, in part, rural Arizona communities in six counties - that require increased broadband capacity to compliment the planning and implementation of local Resource Centers.

The last census showed that **some of Arizona's rural communities are actually beginning to depopulate**. To reverse this trend and ensure that Arizona has a robust and vibrant rural economy and lifestyle, broadband is the new infrastructure of the 21st century that will enable this to happen.

The benefits of high speed broadband are enormous yet many parts of rural Arizona do not enjoy the same broadband capacity and speeds as some urban parts of the state. This is in large part due to return on investment to broadband providers that is impacted by the density of population, and some other factors. This reduced broadband capacity affects the business climate, the local economy, and limits advances in broadband technology that enhance education, healthcare and public safety.

While there is no single formula to implement broadband demand aggregation in a local community, there are generally some basic action items that need to be taken in order to increase local broadband capacity.

A **checklist of activities** involved in demand aggregation includes:

Determine where you are starting from by creating a Base Line:

- Organize a local committee of influential stakeholders, key elected officials and leaders including individuals representing public safety, education, healthcare, local business and community leaders to assist in implementing a local Resource Center. The demand on broadband capacity to meet the requirement of the specific applications will most likely demand provider aggregation for the project.
- Hold an initial meeting to brief these members on the importance of broadband and what it can do for their community. Assign some of the specific tasks below to members of this group, and meet monthly or as needed to give updates and determine next steps.
- Utilize the Arizona Broadband Map funded through a federal grant, and updated every six months to determine local broadband capacity and speeds. www.azbroadband.gov.
 - Specific training for using the Broadband Map can be obtained through the consultants.
- Utilize other resources to assist in the analysis of local broadband capacity to complement the map, e.g., ADOT, utility services, available grants, etc..
- Ask local broadband providers what plans they have in the near future to improve broadband capacity in the community. Also ask local providers what barriers there are to further broadband expansion in the community including the costs of obtaining rights of way permits.
- **Produce a summary report of where you are in broadband capacity in your community.**

Determine what broadband capacity you need and want

- Analyze the community data sets available in the Arizona Broadband Map to outline and understand from a demographical viewpoint the local economic drivers in the community. This analysis should also take into account what types of businesses would realistically locate, or expand to your area. This could include tourism, mining, manufacturing, distribution and other industries.
- Interview local education leaders, healthcare providers, first responders and local business leaders and entrepreneurs and determine what specific applications they would like to be able to utilize with broadband. (For example, distance learning in education; and telemedicine in healthcare – and more specifically what types of telemedicine applications. Some require more bandwidth than others.) In your interview also discover what current applications of broadband they are utilizing, ask them their current broadband capacity, and most importantly what additional broadband capacity they desire and would utilize. ***This is the beginning of demand aggregation.***
- Produce a summary report of what additional broadband capacity the community needs to meet its application goals. It is these so-called “anchor institutions” such as government, schools, larger businesses, healthcare organizations and first responders that are willing to buy that provide the return on investment that providers need to justify expanding broadband expansion in the local community. Anchor institutions are

essentially “big customers” that help underwrite the cost of local broadband infrastructure. The amount of broadband that is specifically needed for an application is contained in the following guide.

Ask Local Providers if they can meet this Broadband Demand

- This can be done informally through conversations with local providers or more formally through an RFI process.
- If local providers cannot fulfill this “broadband gap” identify federal grant opportunities that can assist these providers in expanding their network. Many of these grants are provided through the U.S. Department of Agriculture’s Rural Utilities Program – often called USDA RUS. RUS is the legacy organization to the Rural Electrification Program that transformed the availability of electricity in rural America.
- If local providers have identified to you during your interview - costly “barriers” to developing broadband projects - seek local support to remove these barriers. It can sometimes take two years and cost up to half the cost of a project just to get the permits to start building broadband capacity. Experts have noted that there are sometimes unnecessary legal delays or barriers to building broadband capacity.
- Based on these activities, seek to reach formal or informal agreements with local providers to provide more broadband capacity to your community. This process is commonly referred to as demand aggregation.

Demand Aggregation is a proven method of having service providers work together to increase broadband availability in rural communities in the United States.

This idea is supported in the National Broadband Plan produced by the Federal Communications Commission (FCC).

The chart on the following page describes the speed ranges recommended to support the specific applications. The speeds are relative to costs. The faster the speed, the higher the cost.

Appendix P – NACOG's CEDS update to report NACOG's Community Economic Development Strategy (CEDS) with Broadband

REVISED
MEETING NOTICE AND AGENDA
Pursuant to ARS 18.431.01
NACOG ECONOMIC DEVELOPMENT COMMITTEE
February 6, 2014
Little America Hotel, 2515 E. Butler Ave., Flagstaff, AZ 86001
Teleconference Number: 888/757-2790 passcode 609588

1. **Call To Order/Welcome, Introductions**
Reading of the Mission Statement
Karalea Cox, Vice Chair
2. **Pledge of Allegiance**
3. **Approval of the Minutes, December 5, 2013**
Karalea Cox, Vice-Chair
(Information/Discussion/Action)
4. **Director's Report**
Tori Drew, Regional Director
(Information/Discussion/Action)
5. **The Benefits of A Quality Education on Economic Development**
Dr. Wayne Fox, NAU University Center
(Information/Discussion)
- * 6. **Arizona Film Industry Presentation**
Heather Anardi, Marketing & Public Relations Manager
Flagstaff Convention & Visitors Bureau
(Information/Discussion)
7. **Broadband Update Report**
Bill Bolin, Systems Technology Staffing
(Information/Discussion)
8. **Tourism Committee Report**
Sharon Adams, Co-Chair
(Information/Discussion/Action)
9. **Member Comments**
(Information/Discussion)
10. **Public Comments:**
This item provides Committee members an opportunity to hear public comments on agenda items. Comments not specific to agenda items, according to open meeting laws, will not be addressed by the Committee. At the Chair's discretion, public comment may be limited to five minutes or less.
(Information/Discussion)
11. **Adjournment:**
(Action)

SPB 98 Ord - 0744 - used in Committee

*JOBS
EDUC
Talent
Public Safety*

*3 projects: 1) SR 260 SB1402
2) Resource Center
3) Douglas, AZ
4) Copper Border - Kearney
Municipal
Mining*

Pursuant to the Americans with Disabilities Act, NACOG Economic Development Committee endeavors to ensure the accessibility of its meeting to all persons with disabilities. If you need an accommodation for a meeting, please contact the NACOG office at 928/718-1411 at least 48 hours prior to the meeting (not including weekends and/or holidays) so that an accommodation can be arranged.